THE CHARACTERISTICS OF NIGHT-TIME DRIVERS IN BRITISH COLUMBIA

Province of British Columbia
Ministry of Attorney General
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THE CHARACTERISTICS OF NIGHT-TIME DRIVERS IN BRITISH COLUMBIA

A report of the Motor Vehicle Task Force

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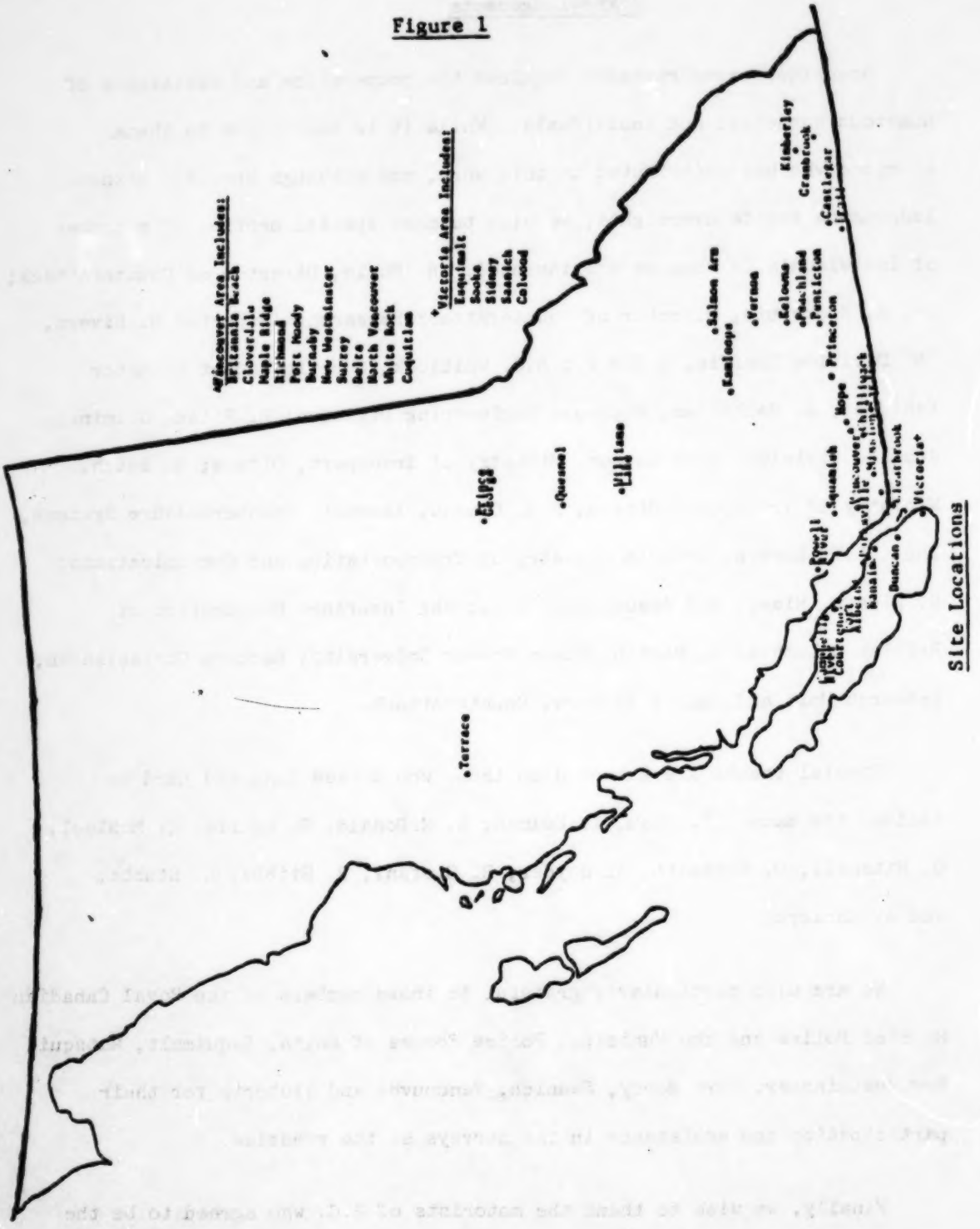
Figure 1



Site Locations

Introduction and Summary

This document represents the analyses of a night-time roadside survey of 7,380 British Columbia drivers done in the Spring of 1981 in order to determine provincial rates of drinking and driving and seat belt use. Additionally, questions on causes of accidents and whether or not the respondents would call the police if they saw a drinking driver were included in the survey.

Regarding blood alcohol content (BAC), 6.1% of the drivers tested were legally impaired, using the 80+ mg/100 ml. criterion laid down in Section 234 of the Criminal Code (Martin, 1981), while 12% had a BAC of over 50 mg/100 ml., which is an offence under British Columbia statutes. A high BAC among drivers was found to be related to: the testing time being later in the evening as opposed to earlier in the evening, the testing day being later in the week; the drivers indicating that they were on a short trip; the drivers indicating that they had been drinking at a licensed establishment as opposed to a private residence; the driver being male; the driver being younger than 50 years of age; the vehicle driven being a truck; the vehicle containing passengers; the drivers not wearing a seat belt; the passengers not wearing seat belts; and the drivers tending to indicate that speed or some cause other than alcohol use was the primary contributor to traffic accidents. Finally, it was noted that both very highly populated areas and very sparsely populated areas had the fewest drinking drivers, and that further research would be necessary to satisfactorily explain this finding.

Concerning seat belt use, 59.5% of the drivers and 52.0% of the passengers were wearing seat belts when stopped. Drivers' seat belt use related positively to: the testing time being earlier as opposed to

later in the evening; it being earlier in the week; the drivers indicating that they were on a long trip; the driver being female; and the driver being older as opposed to younger. It was suggested that, because a low BAC and seat belt use both related similarly to a number of variables, they both may stem from similar motivations.

Drivers who indicated that they would call the police if they saw a drinking driver tended to be female or an older male, while those who thought alcohol to be the primary cause of traffic accidents tended to be in the 16 - 24 year old age group. Overall, 52.7% of the drivers indicated that they thought alcohol was the primary cause of traffic accidents, while 73.4% indicated that they would call the police if they saw a drinking driver. However, it may be that these two figures are probably somewhat inflated due to the desire of drivers to give a socially accepted answer.

Returning to overall BAC figures, there was no statistically significant difference between the findings of this survey and a 1974 survey done in B.C. On the other hand, driving while impaired charges have been decreasing relative to other Criminal Code charges over the past seven years, as has the likelihood of being killed in an alcohol-related fatal crash.

Method

Under a Motor Vehicle Task force initiative to gather data on nighttime driving habits, seat belt use and attitudes toward a number of issues, a total of 7,380 motorists were stopped to be interviewed and have their blood alcohol concentration (BAC) measured. This testing occurred across 140 sites encompassing 47 urban, suburban and rural locations and was done between May 14 and June 14, 1981, on Wednesdays through Saturdays inclusive from 9 p.m. to 3 a.m. in 1 1/2 hour intervals. These dates, days of the week, and times were selected in accordance with internationally accepted methodology on roadside survey techniques and so that data could be compared with a 1974 survey which also used these parameters.

Location and Vehicle Selection: It was calculated that, in order to represent night time drinking driving in B.C. with an overall error of only plus or minus .5%, a sample size of approximately 5,600 drivers would be needed. Based on a sample of at least 40 drivers per testing site a total of 140 sites were needed.

Using information from the 1979 census, towns and cities in B.C. were divided into five strata by Statistics Canada: Census Metropolitan areas (i.e. Vancouver and area, Victoria and area); population centers containing between 50,000 and 99,999 persons; centers containing between 10,000 and 49,999; centers between 5,000 and 9,999; and the remainder of the province. The towns and cities in the first four of these strata were weighted according to the strata population parameters and a random sample was drawn from these weighted locations. (See Table 1, Page 30,31.) The highways, expressways, and main arterials (roads connecting major portions of the towns) for each location selected were then listed and drawn from randomly.

Those drawn were then divided into segments and these segments were drawn from randomly, thus producing a list of road segments within which testing sites were hoped to be located. This process aimed at locating 120 sites within the first four population stata noted above, with the remaining 20 sites to be located outside towns. The rationale for this division was that it ought to give a very accurate representation of drinking drivers in urban and suburban areas, and an adequate representation for the more rural areas. The vastness of the province and budget limitations necessitated a less representative sample in rural areas

Actual test sites were selected from these road segments in terms of the physical characteristices of the locations necessary for the testing. These included adequate lighting, off-road parking space, clear entrances and exits, smooth off-road surfaces, and sufficient traffic flow over the 1 1/2 hour testing period to allow at least 40 drivers to be tested. When several sites were found in the chosen segment, the final site was chosen randomly. When no appropriate sites could be found in the segment, other segments in the general area, or even other segments in other areas were chosen in an attempt to retain the representativeness of the sample within the context of travel and scheduling limitations. The final sample of locations and sites within locations can be found on Map 1, page 2 and on Table 1, page, 30,31 while the schedule for testing can be found in Table 2, page. 32

Finally, vehicles to be stopped for testing were determined by simply taking the next one available after each had been tested. That is, as soon as a tester had finished with questioning a driver, the tester would signal to the police and another driver would be flagged down for testing. While this was not an entirely random process,

it's only likely bias would be to draw more heavily on drivers during the early portion of the testing periods, as the site quota would probably be filled near the end of the allotted time period. It should be noted that due to the difficulty of finding sufficient sites that could accomodate heavy trucks, this class of vehicle was not selected for testing.

Testing Procedure: After passing signs which indicated that a traffic survey was in progress, that a flagman was ahead, and to be prepared to stop, selected motorists were signalled by a local police officer to pull into and stop at the site testing area. Data collection was then undertaken by a 3-person team of specially trained testers, each of whom dealt with separate vehicles.

After being assured that the survey was not associated with the police and that answers would remain confidential, drivers were asked to indicate their age, the anticipated length of the trip, what they thought was the major cause of serious accidents, whether or not they would call the police to report a drinking driver, and, if they had been drinking, whether it was at a licensed liquor outlet or in a private residence. Drivers were then asked to blow into a Borg-Warner J3D ALERT breath-testing device in order to measure blood-alcohol concentration. If the driver refused, the tester then drew a sample of exhaled air from near the driver using a Honda Alcohol Detector which, while less accurate than the ALERT, did not need the driver's co-operation to produce evidence on whether or not the driver had been drinking. Additionally, the testers noted the type of vehicle (automobile,

truck, other), the number of vehicle occupants, whether or not the driver was wearing a seat belt, whether or not the passenger by the driver was wearing a seat belt, the site characteristics (rural, urban, suburban), and the day, time and location of the testing. Finally, the average traffic flow count for the testing period was estimated by sampling the flow over 5-minute periods at the beginning and end of each testing period. A mimimum of 40 drivers were sampled per site.

Analysis: Data collected from the various sites were then weighted in terms of relative population across these regions, population density at testing locations, and proportion of traffic flow at each site. This weighting was done by the System Evaluation Unit, Road and Motor Vehicle Safety, Transport Canada, and specific details of the weighting and site selection can be obtained through CounterAttack offices.

Statistical significance on the cross-tabulations used to present the data was calculated using the Chi-square test.

Results: Blood Alcohol Content

Overall Sample: Of the 7,380 drivers stopped, 268 (3.6%) refused to provide a breath sample, and of these, 104 were screened using the Honda Alcohol Detector and were found to have been drinking, 52 were screened and found to have not been drinking, and the remainder (112) were not screened. One hundred and fifty-five (2.1%) of the drivers attempted to use the more accurate JD3 ALERT breath tester but could not breathe strongly enough to get a reading on the tester, and of these, 83 were found to have been drinking when tested with the Honda Detector, 45 were found not to have been drinking when tested with the Honda Detector and 27 were not screened. The remaining 6,944 drivers (94.1%) produced usable results when tested with the JD3 ALERT.

Regarding the usable blood alcohol content (BAC) data, 77.3% of the motorists tested had a BAC reading of between 0 and 20 mg./100 ml., 10.8% had a BAC reading of between 21 and 50 mg./100 ml., 5.9% had a BAC reading of between 51 and 80 mg./100 ml., and the remaining 6.1% were legally impaired, that is, had readings of 80+ mg./100 ml. The analyses presented in the remainder of the section are based on this JD3 ALERT tested group.

Population Strata: As can be seen from Tables 3a and 3b (Pages 33 and 34), the 50,000 - 99,999 person population strata and the 10,000 - 49,999 population strata contained proportionally more drinking drivers than did the other strata, with the most unpopulated strata containing the fewest drinking drivers (Chi-square = 25.6, d.f. = 12, $p < .02$). For example, the legally impaired (80+ mg. alcohol/100 ml. of blood)

rate in the 50,000 - 99,999 strata was 8.0%, while in the residual sample it fell to 4.4%*.

Trip Miles: In response to the question concerning the anticipated length of the trip, motorists' replies and BAC levels illustrated in Tables 4a and 4b (Page 35 and 36) show that there were more motorists in the 80+ BAC level than one would expect by chance in the 0 - 5 mile trip category (6.9%) and fewer than one would expect in the 16 - 30 mile category (4.1%). Additionally, the 21 - 50 mg./ 100 ml. category in the 100+ mile group is underrepresented in terms of what one would expect by chance (5.2%) (Chi-square = 36.9, d.f. = 12 p. $<$ .001). In fact of all categories the 100+ mile group contains the lowest proportion of drinking drivers, with 85.7% this group having a BAC of 0 - 20 mg./100 ml.

*In order to determine how seriously to take a finding, statisticians determine the result that one would expect to find simply by chance, and then compare that result with the actual result found in the study. The larger the difference between the two, the more likely that one should take the finding seriously. For example, one would expect a coin tossed a number of times to come up heads about 50% of the time and tails the other 50% of the time. Should this not occur, then one might conclude that the coin was not fair. Similarly, if there were no differences among age groups with regard to BAC, then one would expect each group to have about the same BAC, and that BAC would also be the average BAC. On the other hand, the further one group was from that average, the more likely that age does make a difference with regard to BAC. The statistical tests done in this paper all use the general notion of calculating what one would expect by chance if there was no relationship between variables, and then compare that with what was actually found. See, for example, Blalock, 1972, p. 119-142.

Night Tested: Tables 5a and 5b (Page 37 and 38) indicate that there are substantially fewer drinking drivers on Wednesday nights as opposed to Saturday nights, with Thursday and Friday nights both falling between the Wednesday and Saturday rates (Chi-square = 80.1, d.f. = 9, $p. < .001$). To illustrate, on Wednesday night only 4.0% of the drivers were legally impared, while on Saturday night the figure was 7.8%.

Time Tested: regarding the time of the night drivers were tested, Tables 5a and 5b (Page 37and 38) indicate that there is a straightforward relationship between BAC level and time of night such that the later it is in the evening, the more likely there is a higher proportion of drivers on the road who have been drinking (Chi-square = 404.5, d.f. = 9, $p. < .001$). For example, in the impaired (80+ mg./100 ml.) category, the proportion of drivers increases from 2.6%, between 2100 and 2229 hours to 14.4% between 0130 and 0300 hours.

Location of Drinking: Tables 6a and 6b (Page 39 and 40) divide BAC levels in terms of the motorists' report of where they had been drinking. Comparing the Licensed category with the Private residence category, one finds that substantially more drinking motorists had been at licensed as opposed to private locations (Chi-square = 55.5, d.f. = 3, $p. < .001$). To illustrate, 16.3% of drivers who reported having been at a licensed establishment were in the 80+ mg./100 ml. category, while the corresponding figure for those who reported having been drinking at a private place was 10.8%.

Vehicle Type: Concerning the relationship between driver's BAC and the type of vehicle stopped, Tables 7a and 7b (Page 41 and 42) indicate that those driving trucks were much more likely to have been drinking than were drivers of other sorts of vehicles (Chi-square = 40.2, d.f. = 6, $p. < .001$):

10.2% of the truck drivers were legally impaired, while only 5.5% of the car drivers had a BAC of 80+ mg./100 ml.

Number of Vehicle Occupants: From Tables 7a and 7b (Page 41 and 42), it can be seen that the only really noteworthy relationship between BAC and number of occupants occurs in the 80+ BAC category of the 4+ occupant group, where drivers have a much greater chance of being legally impaired than would be expected by chance (Chi-square = 46.2, d.f. = 12, $p < .001$). For example, 5.6% of the drivers with no passengers had a BAC of 80+ mg./100 ml., while 12.2% of the drivers having 3 or more passengers were in the 80+ category.

Seat Belt Use: Tables 8a and 8b (Page 43 and 44) illustrate the use of seat belts by drivers and passengers. For both drivers overall (Chi-square = 204.0, d.f. = 3, $p < .001$) and for the sub-set of drivers with passengers (Chi-square = 186, d.f. = 3, $p < .001$) it was much more likely that those who had been drinking were not wearing seat belts than for those who had not been drinking. To illustrate, fully 63.4% of the impaired drivers were not wearing seat belts, while 59.5% of drivers overall were wearing seat belts.

Chief Accident Cause: From Table 9a and 9b (Page 45 and 46) one can see that those who had been drinking were more likely to have indicated that they thought that speeding and other causes were the chief cause of road accidents, while those who had not been drinking were more likely to name alcohol as the major cause of accidents. (Chi-square = 19.9, d.f. = 6, $p < .001$). Overall, 13% of the drivers thought speed was the major cause of accidents, 52% thought alcohol was the major cause, and 34.3% indicated other causes were major contributors to accidents.

Would Call Police: In response to the question of whether or not they would call the police if they saw a drinking driver (See Tables 9a and 9b, Page 45 and 46), there is no noteworthy relationship between drivers' answers and BAC levels (Chi-square = 13.7, d.f. = 6, p. = .05). However, in all 73.4% of the drivers indicated that they would call the police if they saw a drunk driver.

Drivers'Sex: Regarding the sex of the driver, Tables 10a and 10b Page 47 and 48, show that males were more likely to have been drinking when driving than were females (Chi-square = 57.2, d.f. = 3, p. < .001): 73.9% of the drivers were male while 84.8% of the impaired drivers were male.

Drivers'Age: Drivers' age and BAC levels are related in Tables 10a and 10b, Page 47 and 48, and from these figures it can be seen that those in 50 - 59 year category and especially those in the 60+ year category were much less likely to have been drinking than were those in the younger age groups. However, among these latter groups, there were essentially no noteworthy differences in proportional BAC levels. (Chi-square = 81.7 d.f. = 15, p. < .001). To elaborate, only 2.7% of those in the 60+ year old group were impaired, and only 3.7% of those in the 50 - 59 year old group were impaired, while the figures for the 16 - 19, 20 - 24, 25 - 39 and 40 - 49 year old groups were 5.8%, 6.8% 6.3%, and 7.1% respectively.

BAC levels in the Lower Mainland for 1974 and 1981: Dividing BAC levels for the Lower Mainland data collected in 1974 (Smith, Wolynete and Wiggins) and in 1981 into those drivers with levels greater than or equal to 15 mg./ 100 ml. and those with BAC levels equal to or greater than 75 mg./100 ml., one finds levels of 24.0 and 7.8 in 1974 and 24.2 and 6.1 in 1982. These differences probably occurred by chance, and were not statistically significant. Other areas of B.C. could not be compared due to lack of 1974 data.

Results: Seat Belt Use

Overall Sample: As can be seen from Table 8b (Page 44), 59.5% of the drivers and 52.0% of the passengers were wearing seat belts.

Population Strata: Table 11 on page 49 represents the relationship between drivers' seat belt use and population strata (Chi-square = 38.9, d.f. = 4, p. < .001). The figures indicate that the highest use of seat belts occurs in the densely populated CMAs (61.8%) and in the sparcely populated residual rural areas (62.8%), with all other areas having between about 51% to 55% seat belt use.

Time Tested: As can be seen from Table 12 (Page 50) seat belt use dropped from a high of 61.3% between 9 - 10:30 p.m. to 49.9% from 1:30 - 3:00 a.m. (Chi-square = 16.2, d.f. - 3, p. < .01).

Night Tested: As can be seen from Table 12 (Page 50), there was no strong relationship between day of week and seat belt use (Chi-square = 4.9, d.f. = 3, p. = not significant).

Trip Miles: Finally from Table 12 (Page 50), it can be seen that drivers' seat belt use is extremely high in the "greater than 100 miles" trip distance category (99.7%), while the drivers in the other distance categories all range between 55% and 60% seat belt use (Chi-square = 80.0, d.f. = 4, p. < .001).

Drivers' Sex: As can be seen from Table 13 (Page 51), 67.9% of the female drivers were wearing seat belts while only 54.0% of the males were wearing seat belts (Chi-square = 44.5, d.f. = 1, p. < 001).

Drivers' Age: From Table 13, (Page 51), it can be seen that for both male drivers and female drivers the older the person is the more likely they are wearing seat belts. This is a strong relationship for the males, ranging from 49.1% seat belt use in the 16 - 24 year old category to 75.0% in the 60+ year old category (Chi-square = 9.8, d.f. = 3, $p < .02$).

Blood Alcohol Content: As noted in the Results: Blood Alcohol Content section, page 9, there is a negative and statistically significant relationship between seat belt use and having been drinking (see also Table 8a and Table 8b pages 43 and 44).

Results: Attitudes

Would Call Police: As noted in the Results: Blood Alcohol Content section, there was only a weak relationship between BAC and drivers' answers to the question of whether or not they would call the police if they saw a drinking driver, with the overall percent answering "yes", being 73.4%. On the other hand, as can be seen from Table 14 (page 52), males were slightly less likely to indicate they would call the police (75.5%) than were females (77.2%) (Chi-square = 20.0, d.f. = 1, p. < .001). Also, the older the male driver, the more likely he would indicate that he would call the police: 71.7% of the 16 - 24 year old category indicated "yes" while 90.1% of the 60+ year old category indicated "yes" (Chi-square = 25.2, d.f. = 3, p. < .001). On the other hand, for the females there was no statistically significant relationship between age and whether or not they indicated that they would call the police upon seeing a drinking driver (Chi-square = 1.74, d.f. = 3).

Chief Accident Cause: The overall figures indicate that alcohol is identified as the chief cause of accidents by 52.7% of those questioned, speed by 13.0% of those questioned, and other causes were identified by 34.3% of those questioned. Turning to the relationship between drivers' age and their assessment of the chief cause of road accidents, Table 15 (Page 53) illustrates that more people in the 60+ year old category (19.6%) thought that speed was the primary cause of accidents, than did those in other age categories. Similarly, fewer in the 60+ category (41.0%) thought alcohol use was the primary accident cause than did those in other categories. On the other hand, those in the 16 - 24 year old age group indicated that they thought alcohol to be the chief cause of road accidents more frequently (57.6%) than did those in the other age groups (Chi-square = 73.1, d.f. = 9, p. < .001).

Finally, as noted in the Results: Blood Alcohol Content section, and as illustrated in Tables 9a and 9b (Page 45 and 46), drinking drivers were more likely to cite causes other than alcohol as the chief contributors to traffic accidents.

Discussion

The following discussion parallels each analysis reported in the Results section, and follows with some general conclusions and recommendations for further research and analysis.

Blood Alcohol Content:

Overall Sample: Initially, it should be emphasized that the on-site interview techniques of the testing teams was extremely persuasive and successful, as only 3.6% of the drivers refused to co-operate, as compared to the overall national average of a 6.9% refusal rate obtained in the 1974 (Smith, et al.) survey. The Honda Alcohol Detector findings suggest that those who refused were more likely to have been drinking than those who co-operated: 33% of those who refused and were screened with the Honda Detector had not been drinking, while of those who co-operated and successfully used the ALERT Tester (94% of the sample), 77% had a BAC of between 0 and 20 mg./100 ml. These figures are roughly comparable and therefore the overall BAC figures probably very slightly underestimate the actual BAC levels in the province.

Taken at face value, the overall results indicate that, on the one hand about 77% of the drivers on the road are relatively sober, while on the other hand about 6% are legally impaired. However, as discussed

below, these figures vary widely over days of week, time of day, and geographical region. Further, the state of a drivers intoxication with regard to the legal limits does not relate perfectly to that driver's ability to handle safely a vehicle, which is contingent upon, among other things, the driver's experience with driving, experience with drinking, psychological state, physiological state (e.g., tiredness, use of other drugs), the state of the vehicle, traffic conditions, road conditions, weather and the like. In short, a driver can be dangerously impaired without being legally impaired. For example, in Borkenstein, Crowther, Shumate, Ziel and Sylman's (1964) classic study of alcohol related accidents, a BAC level of 50 mg./100 ml. or greater was found to be positively related to traffic accidents. Thus, if one were to use that level as a bench mark for impairment, the rate of impaired drivers in B.C. rises to a startling 12%.

Population Strata: It is not surprising that the proportion of drinking drivers is low in the more rural areas: there are probably fewer public drinking places, and a higher proportion of the drivers would be just "passing through", in the midst of a long journey and thus would be unlikely to have been drinking. On the other hand, it is less clear why the densely populated metropolitan areas should have fewer drinking drivers than do locations having populations between 10,000 and 99,999 persons. It is possible that the metropolitan areas have a wider range of social activities and/or fewer drinking places and/or better law enforcement than do the smaller centers and this draws people away from drinking, but this is merely speculation at this point. Indeed, it would be useful to investigate these notions within the context of a study that would allow the direct comparison of locations, as opposed to the current study which only allows strata, not locations to be compared.

Trip Miles: The results indicate that those in the 16 - 30 mile trip category and those in the 100+ mile category have the lowest BAC levels. If one assumes that the most drinking drivers are coming from the place that they were drinking, then it does not seem surprising that drivers on a 100+ mile trip have a low BAC, as it is unlikely that one would want to drive over 100 miles to drink. On the other hand, the low BAC level in the 16 - 30 mile category is more difficult to understand. Perhaps those in densely populated urban areas do not need to go more than 15 miles in order to drink, while those in sparsely populated rural areas often go more than 30 miles, thus leaving the 16 - 30 mile category with relatively low BAC readings. In any case, the data need to be broken down into site classes by trip lengths in order to test this notion.

Night Tested: As was found nationally in the 1974 survey (Smith, et al.), the lowest BAC levels were found on Wednesday and the highest on Saturdays, with Thursday and Friday levels being similar to each other and following between the Wednesday and Saturday levels.

Time Tested: Again, as was found in the national survey (Smith, et al., 1974), the later in the evening, the more likely to find a high BAC among drivers. However, one might also expect this to vary in terms of the days of the week, possibly with peak BAC periods earlier on weekdays as oppossed to weekends. This notion warrants further analysis.

Location of Drinking: The 1974 national survey (Smith, et al.) finding that there was a higher proportion of drinkers coming from licensed as opposed to private drinking places was replicated in the current survey. However, these figures may vary in terms of day of week and site location.

Vehicle Type: While the analysis done thus far indicates that those driving trucks were more likely to have been drinking than were other groups, this result cannot be considered reliable until further analysis are performed. For example, if there are proportionally more trucks in suburban and rural areas than in urban areas, and there is more drinking in suburban and rural areas than in urban areas, than it may well be that the area and not vehicle type is the better predictor of drivers drinking. Minimally this result needs to be considered within the context of time of day, day of week, site type and region. Also, it must be remembered that large vehicles were excluded from the study and it follows that commercial vehicles were therefore underrepresented.

Number of Vehicle Occupants: Considering the generally social function that drinking often takes, it is not surprising that vehicles carrying relatively more occupants are more likely to be driven by drivers with a high BAC than are vehicles with relatively fewer occupants.

Seat Belt Use: In as much as driving after having been drinking and not wearing a seat belt are both irresponsible, illegal and dangerous behaviours, it is reasonable that the two should be positively related. That is, the sort of person who would do one would likely do the other.

Chief Accident Cause: Presumably it is because they do not want to consider the seriousness of their behaviour that drinking drivers tend to assume that it is speeding or some other cause, as opposed to alcohol use, that is the chief cause of motor vehicle accidents.

Drivers' Sex: The results indicate that males were about twice as likely to be legally impaired and drive than were females.

Drivers' Age: While younger drivers are more likely to be involved in alcohol related fatal crashes (eg. Borkenstein, et al., 1964), they do not represent a particularly high BAC group when compared to other groups below the age of about 50. On the other hand, those above

50 years of age seem to drink and drive considerably less often than those below the age of 50.

BAC 1974 Vs. 1981: The fact that there was no statistically significant change in BAC levels in the Lower Mainland between the 1974 (Smith, et al., 1974) survey and the current survey does not imply necessarily that there have been no changes in drinking patterns. Further, this sort of criminal behaviour must be understood within the context of changes in other crime rates, population composition, the economy and the like. For example, as can be seen from Table 16, page 54 taking the number of driving while impaired charges as a percent of the number of adults charged with Criminal Code violations, one finds the figures for 1975, 1976, 1977, 1978, 1979, 1980, and 1981 to be 43.2%, 43.6%, 40.9%, 38.5%, 35.9%, 35.8% respectively. From this, one could argue that, while other offences are increasing, driving while impaired is not, at least in terms of the relative number of charges laid. Additional support for the notion that drinking driving levels have remained relatively stable can be drawn from examining the litres of absolute alcohol per person over 15 years of age consumed in B.C. between 1974 and 1980. From these figures one can see that this amount has remained relatively stable fluctuating from a low of 12.0 in 1977 to a high of 13.0 in 1980.

On the other hand, while drinking driving levels and alcohol consumption levels have remained relatively stable, the likelihood of being killed in a an alcohol-related crash has generally decreased. This can be seen by examining the ratio of fatalities/miles driven x 10^8 and by the ratio of fatalities to number of registered drivers in the province. In both instances the likelihood of being killed in an alcohol-related crash was

less in 1980 than in 1974, although the likelihood of being killed is greater than that for 1977. It is possible that the very low 1977 likelihood had to do with the then new seatbelt legislation, reduction in maximum speed limits, exceptionally low alcohol use during that year, and the inception of CounterAttack.

Finally, interpreting a difference between the 1974 sample and the 1981 sample is difficult for reasons having to do with sampling and statistics. For example, most phenomena vary somewhat on a more-or-less random basis. It follows that it is possible that the figures from the 1974 sample are somewhat low and the figures from the 1981 sample are somewhat high simply due to random differences in the samples. In short, trends cannot be determined by just two samples. A second problem is knowing the exact average value of the BAC measure, or indeed of any other measure, has to do with the probable size of the sampling error. Certainly any sample is only an approximation of the total population. The sampling error calculated for the 1974 group having a BAC count of 75+ mg./100 ml. is 2.8 percentage points, which means that the true proportion of the population having a BAC of 75 mg./100 ml. in 1974 was probably somewhere between 5% and 10.6% while the 75+ mg./100 ml. figure for the 1981 sample was 6.4%. Therefore it is impossible to know absolutely whether or not there is a true difference between the 1974 and 1981 samples. All that can be said is that <u>probably</u> ($p = .05$) there is no real difference between the groups because 6.4% falls between 5% and 10.6%.

Seat Belt Use:

A general pattern does seem to emerge from these data, and the reasoning goes as follows: Not wearing a seat belt was shown above to be related to having a high BAC. Both a high BAC and low seat belt use also related to the testing time (late), trip distance (short), the driver's sex (male), and the driver's age (younger). These relationships among the variables lead one to the hypothesis suggested in the earlier discussion on the relationship between drinking and driving and not wearing a seat belt: that both behaviours stem from a similar lack of responsibility and concern and can therefore both be viewed as originating from the same personality characteristics and motivations.

Attitudes:

Would Call Police: While 73.4% of the drivers indicated that they would call the police if they saw a drinking driver, one suspects that a considerably smaller proportion of drivers actually have or would call the police. It is more likely that this question was answered in the direction of social desirability and an attempt to appear responsible and cooperative. The finding that females and older males averaged an even higher percent of "yes" answers further supports this notion, as both of these groups generally tend to try to appear as responsible persons.

Chief Accident Cause: The relationship between BAC and the driver's assessment of the chief cause of accidents has already been discussed.

Overall, one might be suspicious of the validity of the finding that fully 52.7% of the drivers actually thought that alcohol was primary cause of traffic accidents. After having already been asked about drinking, it is likely that "alcohol" as a response was already prompted in the mind of the driver. This notion is supported

by the finding that four times as many drivers cited "alcohol" as did those who cited "speed". It is unfortunate that the responses of the 2,531 drivers who cited a cause other than "speed" or "alcohol" were not recorded in some way.

Finally, it is interesting that 16 - 24 year old drivers cited "alcohol" as the chief cause more often than did older drivers. Possibly the public information programs directed at high school students and those programs depicting younger persons drinking and driving are having an educational effect.

General Conclusions

Generally speaking, this sort of epidemiological research is worthwhile for a number of reasons: it allows the discovery of trends; it defines relationships among variables that can lead to an understanding of the causal links among the variables; can identify "at risk" and "target" groups; and it can lead to practically oriented responses to the problems under study.

In terms of identifying and stopping drinking drivers, the police might concentrate on local vehicles, as the results indicated that those on long trips are likely to have low BAC. Also, late in the week and late at night appeared to be high driver BAC periods, while male drivers and those under 50 years of age seemed to be more likely to have been drinking than older persons or females. Vehicles with passengers are also more likely to be driven by a driver with a high BAC than vehicles containing a driver only. Finally, both very densely and very sparsely populated areas seem to have the fewest drinking drivers, and this finding warrants further investigation.

With regard to CounterAttack policy and target groups, it is noteworthy that those who drink and drive do not perceive alcohol to be as major a contributor to crashes as do their more sober counterparts. Perhaps this relationship can be exploited in terms of public information. Also, as males were shown to be a more "at risk" group and it was also shown that it is a broad age range that drinks and drives, possibly CounterAttack information programs could be aimed specifically at these groups. Additionally,

the finding that younger drivers cited "alcohol" as the major cause of accidents more frequently than did older drivers suggests that these younger persons may be more sensitized to the dangers of drinking and driving, and this might be related to drinking driving education programs in the schools.

Considering the seat belt use results, as this behaviour and drinking and driving are negatively related, and as many variables that predicted a low BAC also predicted seat belt use, then one can hypothesize that both drinking and driving and not wearing a seat belt stem from similar motivations and personality factors. If this proved to be the case, the educational campaigns might profitably combine information on both seat belt use and drinking driving.

Finally, while the overall BAC levels found in the 1974 survey do not differ significantly from those found in the 1981 survey, figures relating impaired driving charges with other criminal code charges indicate that drinking driving may be decreasing relative to the levels of other illegal activities. Additionally, although drinking driving levels and drinking levels seems to have changed very little over the 1974 - 1980 time period, the likelihood of being killed in an alcohol-related crash has decreased somewhat during that time.

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APPENDIX

TABLES

TABLE 1

ALLOCATION OF SITES BY POPULATION STRATA*

Strata 1: Census Metropolitan Areas (CMA)	# Sites
Victoria CMA	
Esquimalt	1
Saanich	2
Sidney	2
Victoria	2
Vancouver CMA	
Burnaby	8
Coquitlam	3
Cloverdale	1
Delta	2
Maple Ridge	1
New Westminister	4
North Vancouver	6
Port Moody	1
Richmond	4
Surrey	4
Vancouver	19
White Rock	2
TOTAL	63

Strata 2: Locations Having Populations from 50,000 - 9,999	# Sites
Kamloops	8
Kelowna	3
Prince George	6
TOTAL	17

Strata 3: Locations Having Populations from 10,000 - 49,999	# Sites
Campbell River	2
Mission	2
Nanaimo	6
Penticton	2
Port Alberni	4
Powell River	2
Terrace	4
Vernon	4
TOTAL	26

TABLE 1
Con't

Strata 4: Locations Having Populations of 5,000 - 9,999	# Sites
Castlegar	2
Chilliwack	1
Courtenay	2
Cranbrook	2
Kimberly	2
Quesnel	2
Salmon Arm	2
Squamish	1
Trail	2
Williams Lake	4
TOTAL	20

Strata 5: Locations Having Less Than 5,000	# Sites
Brittania	1
Clearbrook	1
Colwood	4
Duncan	1
Hope	2
Parksville	1
Peachland	1
Princeton	2
Sardis	1
Sooke	1
TOTAL	15

*Based on 1979 Census Data

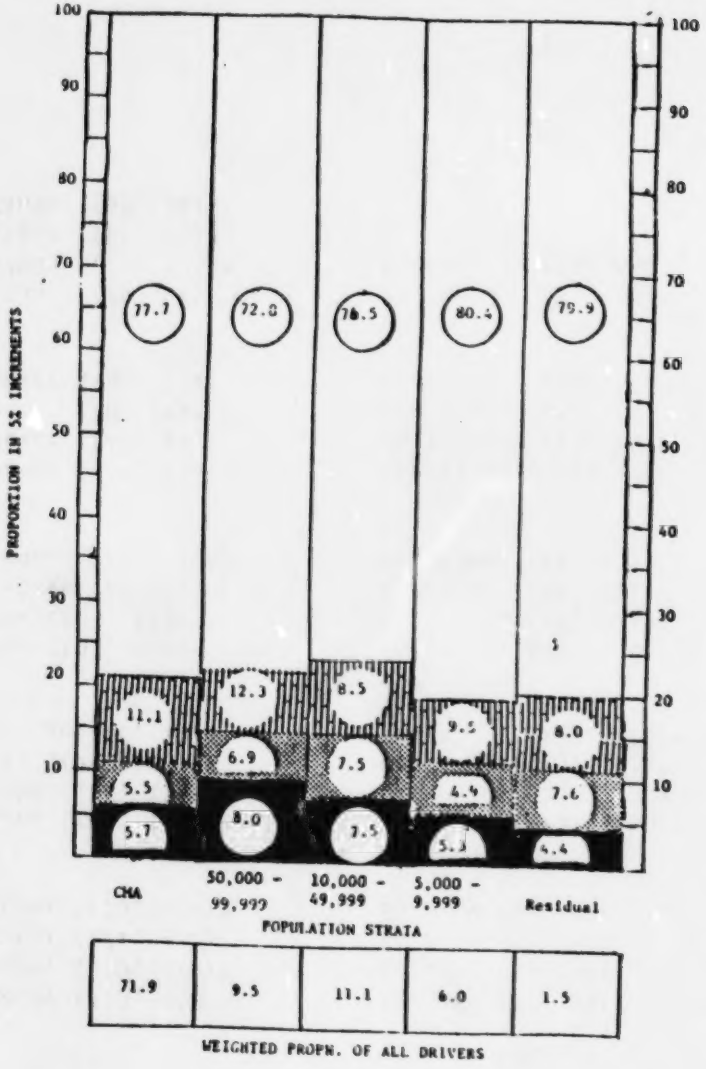
Table 2
Schedule by Location

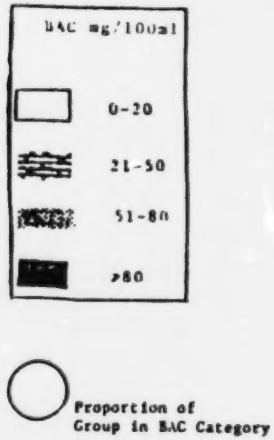
	Stefani	Esau	Stibbs	Suckert
May 13	Vancouver (117, 118)	Burnaby (87, 88)	Richmond (83, 84)	North Van (82, 81)*
May 14	Vancouver (119, 120)*	Burnaby (89, 90)	Richmond (85, 86)*	North Van (67, 80)
May 15	Vancouver (121, 122)	Burnaby (91, 92)	White Rock (77, 78)	Mission/Abbot (18, 19)*
May 16	Vancouver (123, 124)*	Burnaby (93, 96)	Vancouver (129, 130)*	Brit/Squam (66, 65)
May 20	Wms Lake (114, 115)	Cranbrook (137, 138)*	Vancouver (133, 134)*	Colwood (29, 34)
May 21	Wms Lake (116, 136)*	Kimberley (139, 140)	Powell River (20, 21)	Sooke/Esq (30, 28)*
May 22	Quesnel (99, 100)	Castlegar (75, 111)*	Campbell River (15, 14)	Colwood (32, 33)
May 23	Pr. George(102, 101)*	Trail (112, 113)*	Courtenay (12, 13)*	Saanich (38, 37)*
May 27	Terrace (107, 108)*	Hope (59, 60)	Pt. Alberni (8, 9)	Nanaimo (2, 3)*
May 28	Terrace (109, 110)	Princeton (97, 98)*	Pt. Alberni (10, 11)*	Nan/Dunc (4, 31)
May 29	Pr. George (103, 104)	Kelowna (44, 42)	Parksville/Nan (7, 6)	Sidney (26, 27)
May 30	Pr. George (105, 106)	Peach/Kel (41, 43)*	Nanaimo (5, 1)*	Victoria (36, 35)*
June 3	Vancouver (125, 126)*	Surrey (73, 72)	Penticton (40, 39)*	Kamloops (52, 53)*
June 4	Vancouver (127, 128)	Chilliwack (17, 16)*	Vernon (48, 47)	Kamloops (51, 58)
June 5	Delta (70, 71)*	New West (61, 62)	Vernon (45, 46)*	Kamloops (55, 56)*
June 6	Vancouver (131, 132)	New West (63, 64)	Salmon Arm(50, 49)	Kamloops (57, 54)
June 10	West Van (79, 68)	Pt. Moody (94, 23)*		
June 11	Haney/Van (22, 135)*	Surrey (76, 69)		
June 12	Coquitlam (24, 25)*			
June 13	Coq/Clover (95, 74)			

Site Times

(---, ---) 9:00 and 12:00
(---, ---)* 10:30 and 1:30

TABLE 3a POPULATION STRATA



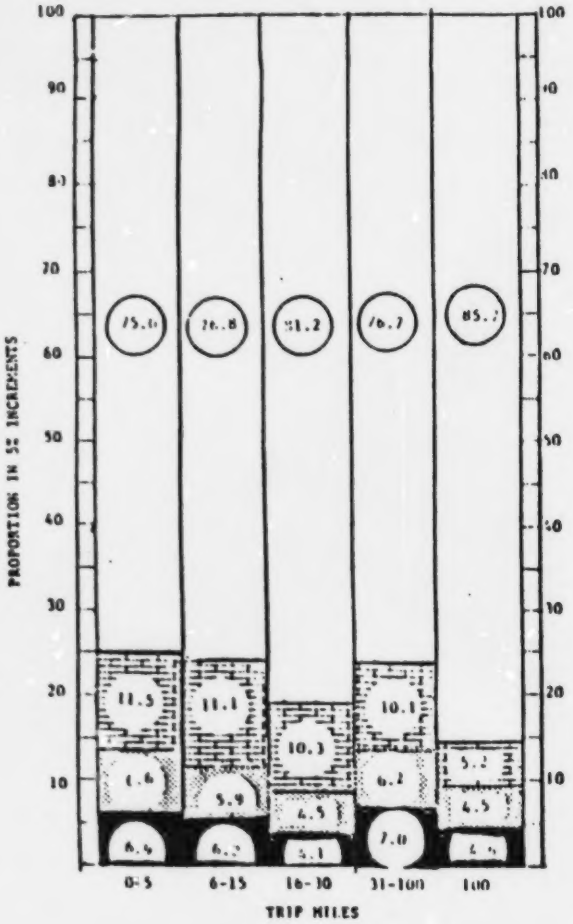


Key for all graphs

TABLE 3b POPULATION STRATA

Variable	BAC mg/100 ml. 0-20	21-50	51-80	>80	Weighted Propn. of all drivers	Weighted Propn. of impaired drivers
CMA	77.7	11.1	5.5	5.7	71.9	67.5
50,000 - 99,999	72.8	12.3	6.9	8.0	9.5	12.5
10,000 - 49,999	76.5	8.5	7.5	7.5	11.1	13.7
5,000 - 9,999	80.4	9.5	4.9	5.3	6.0	5.2
Residual	79.9	8.0	7.6	4.4	1.5	1.1

TABLE 4a TRIP MILES



32.9	34.6	19.7	9.2	3.6

WEIGHTED PROPS. OF ALL DRIVERS

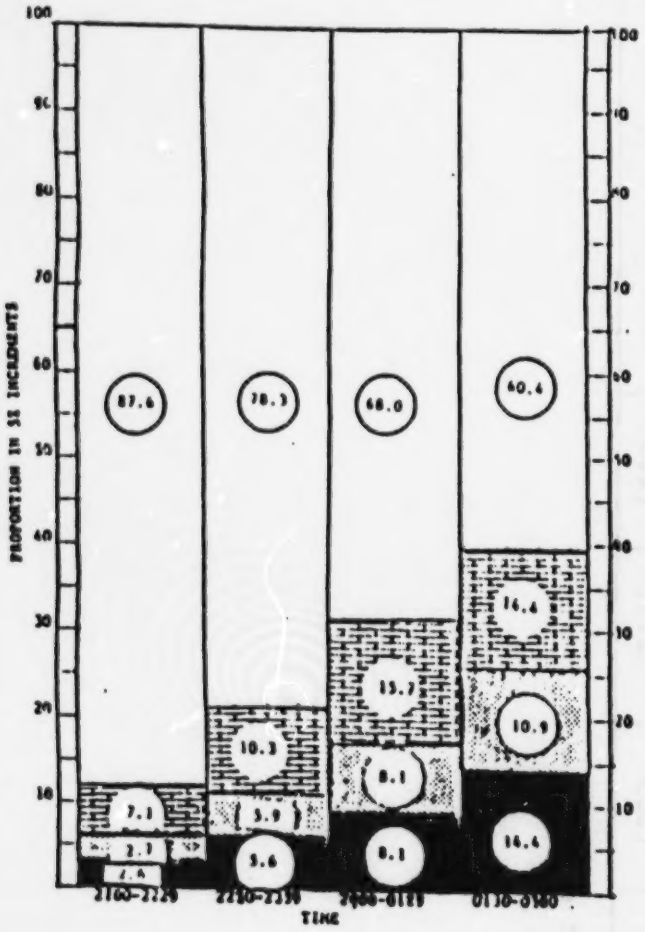
Key for all graphs can be found on Page 33

TABLE 4b TRIP MILES

VARIABLE	BAC mg/100ml 0-20	21-50	51-80	>80	Weighted propn of all drivers	Weighted propn of impaired drivers
	%	%	%	%	%	%
TRIP MILES						
0-5	75.0 (2.0)	11.5 (1.4)	6.6 (1.1)	6.9 (1.6)	32.9	38.0
6-15	76.8 (0.7)	11.1 (1.0)	5.9 (0.9)	6.2 (1.2)	34.6	35.6
16-30	81.2 (1.5)	10.3 (2.8)	4.5 (0.9)	4.1 (0.8)	19.7	13.3
31-100	76.7 (3.3)	10.1 (0.9)	6.2 (0.7)	7.0 (2.3)	9.2	10.4
>100	85.7 (4.6)	5.2 (2.5)	4.5 (1.4)	4.6 (1.5)	3.6	2.7

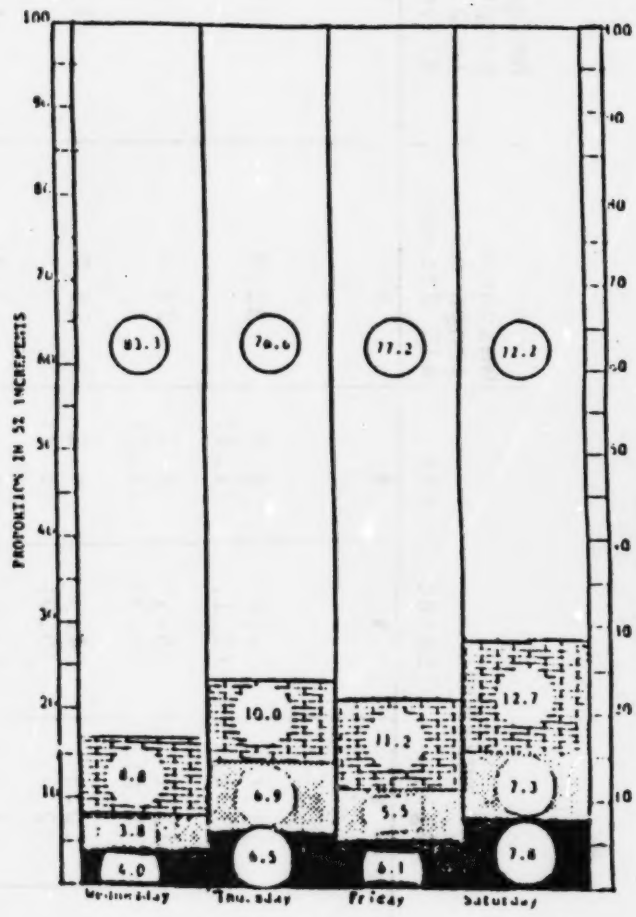
*( )=2 standard errors

TABLE 5a NIGHT AND TIME



35.1	32.2	20.9	11.8

WEIGHTED PROPN. OF ALL DRIVERS



28.4	18.9	21.9	30.7

WEIGHTED PROPN. OF ALL DRIVERS

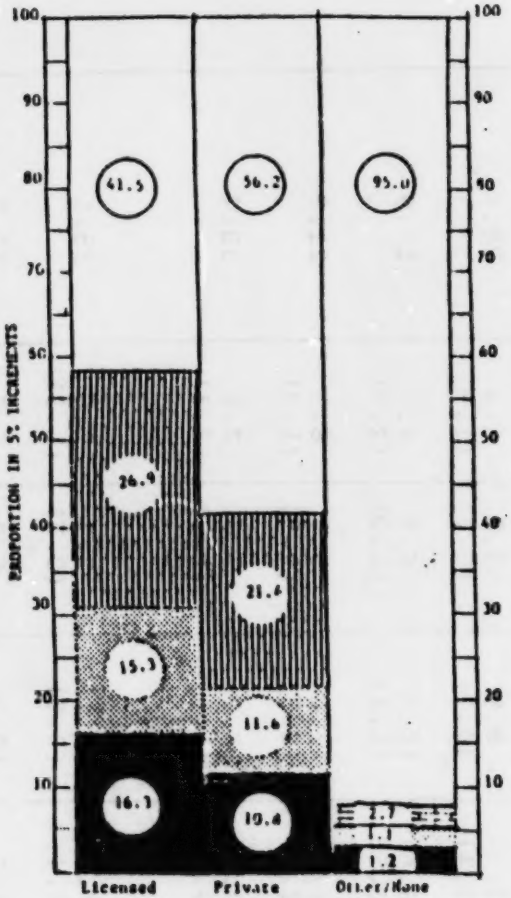
Key for all graphs can be found on Page 33

TABLE 5b NIGHT AND TIME

VARIABLE	BAC mg/100ml 0-20	21-50	51-80	>80	Weighted propn of all drivers	Weighted propn of impaired drivers
	%	%	%	%	%	%
NIGHT						
Wednesday	83.3 (2.4)	8.8 (0.7)	3.8 (0.6)	4.0 (1.9)	28.4	18.5
Thursday	76.6 (1.5)	10.0 (1.6)	6.9 (1.0)	6.5 (2.4)	18.9	20.8
Friday	77.2 (2.5)	11.2 (2.3)	5.5 (0.9)	6.1 (1.0)	21.9	21.6
Saturday	72.2 (4.0)	12.7 (1.8)	7.3 (1.3)	7.8 (2.3)	30.7	39.1
TIME						
2100-2229	87.6 (0.4)	7.1 (0.8)	2.7 (0.2)	2.6 (1.3)	35.1	14.9
2230-2359	78.3 (2.5)	10.3 (1.6)	5.9 (1.0)	5.6 (2.1)	32.2	29.1
2400-0129	68.0 (2.0)	15.7 (1.0)	8.1 (1.5)	8.1 (1.1)	20.9	27.9
0130-0300	60.4 (4.5)	14.4 (2.0)	10.9 (2.7)	14.4 (2.8)	11.8	28.1

*( )=2 standard errors

TABLE 6a DRINK LOCATION



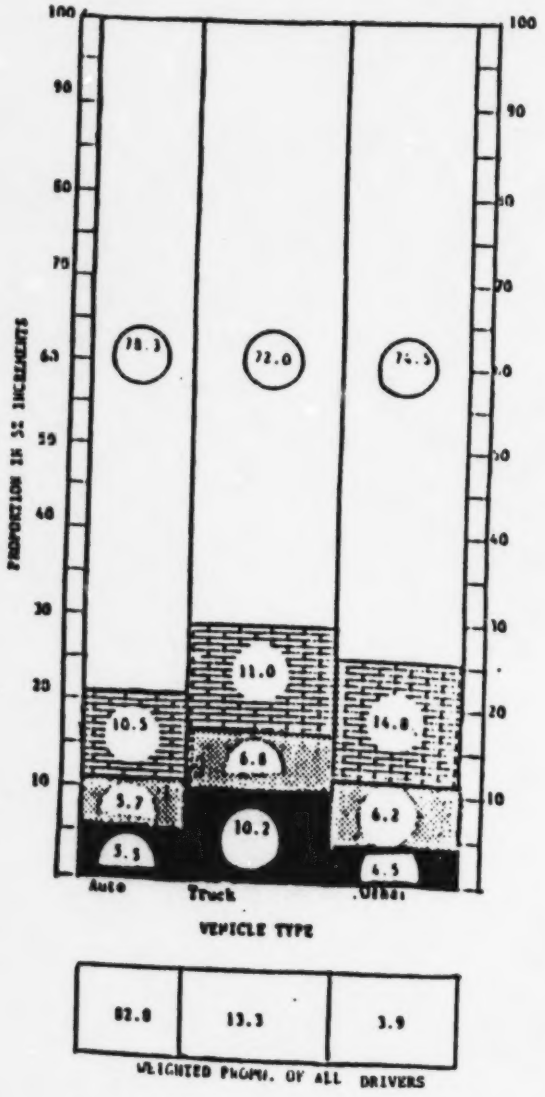
Key for all graphs can be found on Page 33

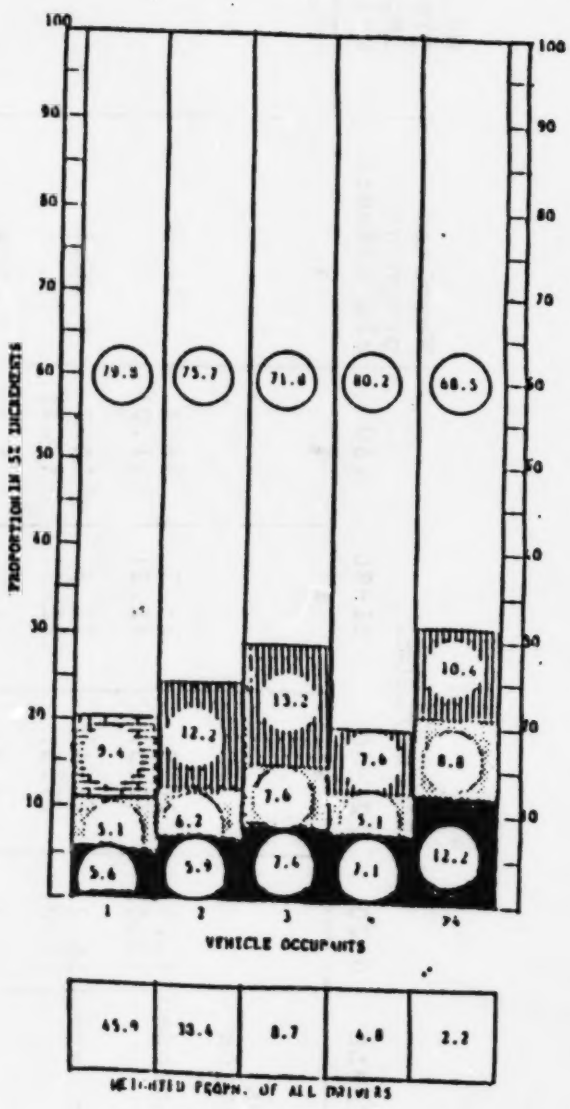
TABLE 6b DRINK LOCATION

VARIABLE	BAC mg/100ml 0-20	21-50	51-80	>80	Weighted propn of all drivers	Weighted propn of impaired drivers
	%	%	%	%	%	%
DRINK LOCATION						
Licensed	41.5 (2.5)	26.9 (2.3)	15.3 (1.3)	16.3 (1.0)	18.3	50.7
Private	56.2 (1.0)	21.4 (7.5)	11.6 (1.7)	10.8 (2.1)	20.1	37.7
Other/ None	95.0 (0.3)	2.7 (0.7)	1.1 (0.5)	1.2 (0.6)	61.5	11.6

*( )=2 standard errors

TABLE 7a VEHICLE TYPE AND VEHICLE OCCUPANTS





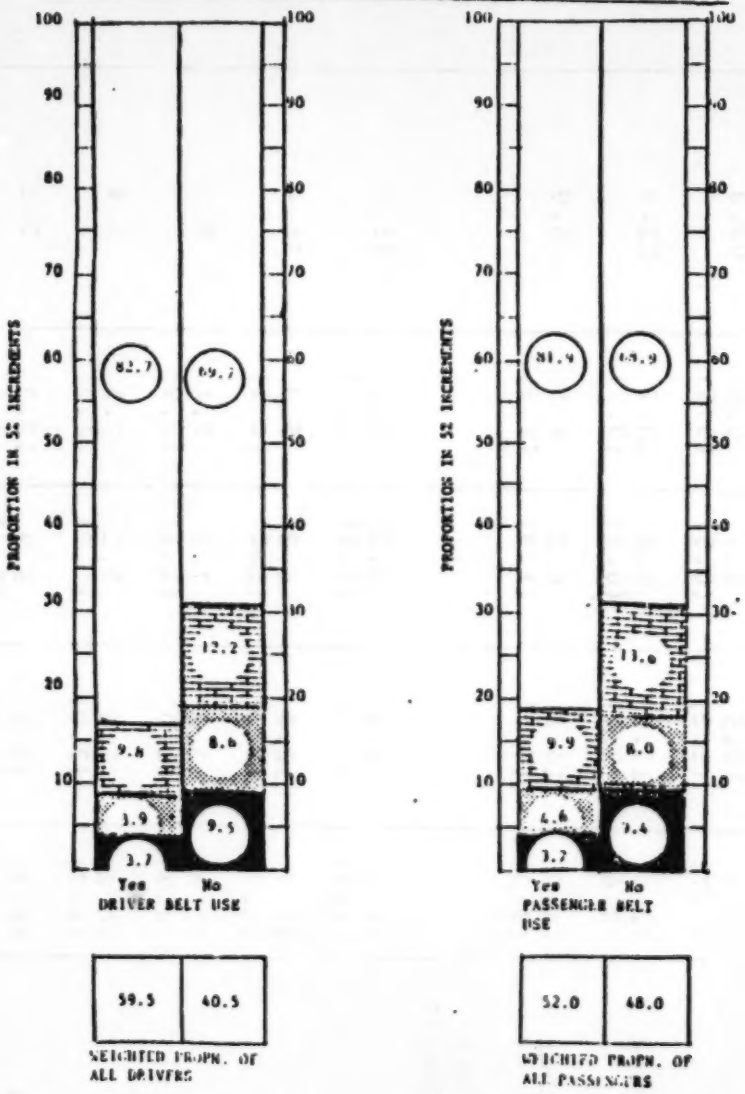
Key for all graphs can be found on Page 33

TABLE 7b VEHICLE TYPE AND VEHICLE OCCUPANTS

VARIABLES	BAC mg/100ml 0-20	21-50	51-80	>80	Weighted propn of all drivers	Weighted propn of impaired drivers
	%	%	%	%	%	%
VEHICLE TYPE						
Auto	78.3 (0.7)	10.5 (1.2)	5.7 (0.5)	5.5 (0.8)	82.8	75.2
Truck	72.0 (2.6)	11.0 (2.2)	6.8 (0.8)	10.2 (0.7)	13.3	22.0
Other	74.5 (3.3)	14.8 (6.3)	6.2 (1.9)	4.5 (1.9)	3.9	2.8
VEHICLE OCCUPANTS						
1	79.8 (1.3)	9.4 (0.5)	5.1 (0.6)	5.6 (1.1)	45.9	42.7
2	75.7 (1.7)	12.2 (2.2)	6.2 (1.2)	5.9 (1.1)	38.4	37.2
3	71.8 (4.3)	13.2 (1.0)	7.6 (1.3)	7.4 (2.9)	8.7	10.0
4	80.2 (4.7)	7.6 (3.0)	5.1 (1.2)	7.1 (4.2)	4.8	5.6
>4	68.5 (10.1)	10.4 (4.1)	8.8 (7.6)	12.2 (8.1)	2.2	4.5

*( )=2 standard errors

TABLE 8a DRIVER BELT USE AND PASSENGER BELT USE



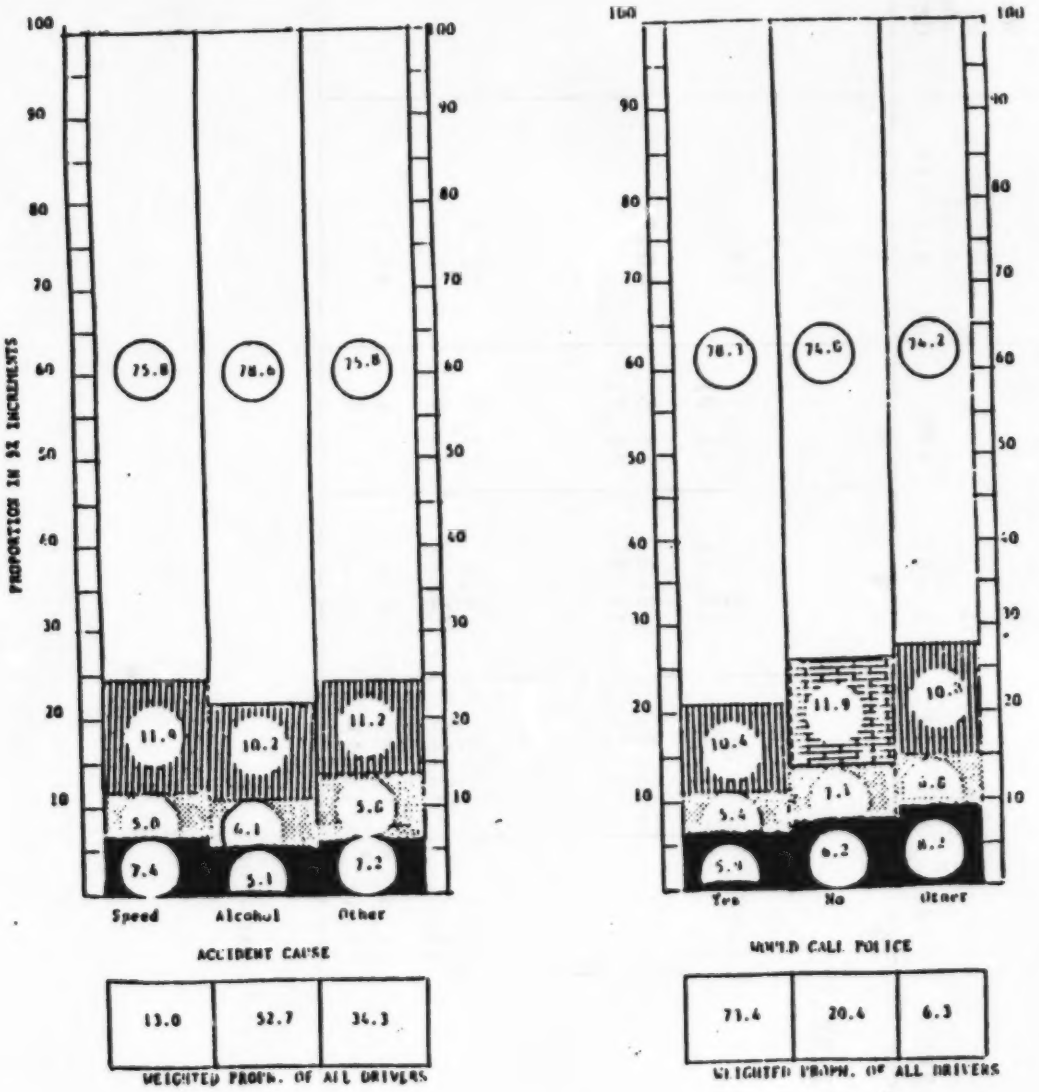
Key for all Graphs can be found on Page 33

TABLE 8b DRIVER BELT USE AND PASSENGER BELT USE

VARIABLE	BAC mg/100ml 0-20	21-50	51-80	>80	Weighted propn of all drivers	Weighted propn of impaired drivers
	%	%	%	%	%	%
DRIVER BELT USE						
Yes	82.7 (1.0)	9.8 (1.3)	3.9 (0.4)	3.7 (1.2)	59.5	36.6
No	69.7 (1.0)	12.2 (1.2)	8.6 (1.0)	9.5 (0.5)	40.5	63.4
PASSENGER BELT USE						
Yes	81.9 (1.4)	9.9 (1.1)	4.6 (1.1)	3.7 (1.6)	52.0	30.3
No	68.9 (3.4)	13.6 (1.4)	8.0 (1.1)	9.4 (1.5)	48.0	69.7

*( )=2 standard errors

TABLE 9a ACCIDENT CAUSE AND WOULD CALL POLICE



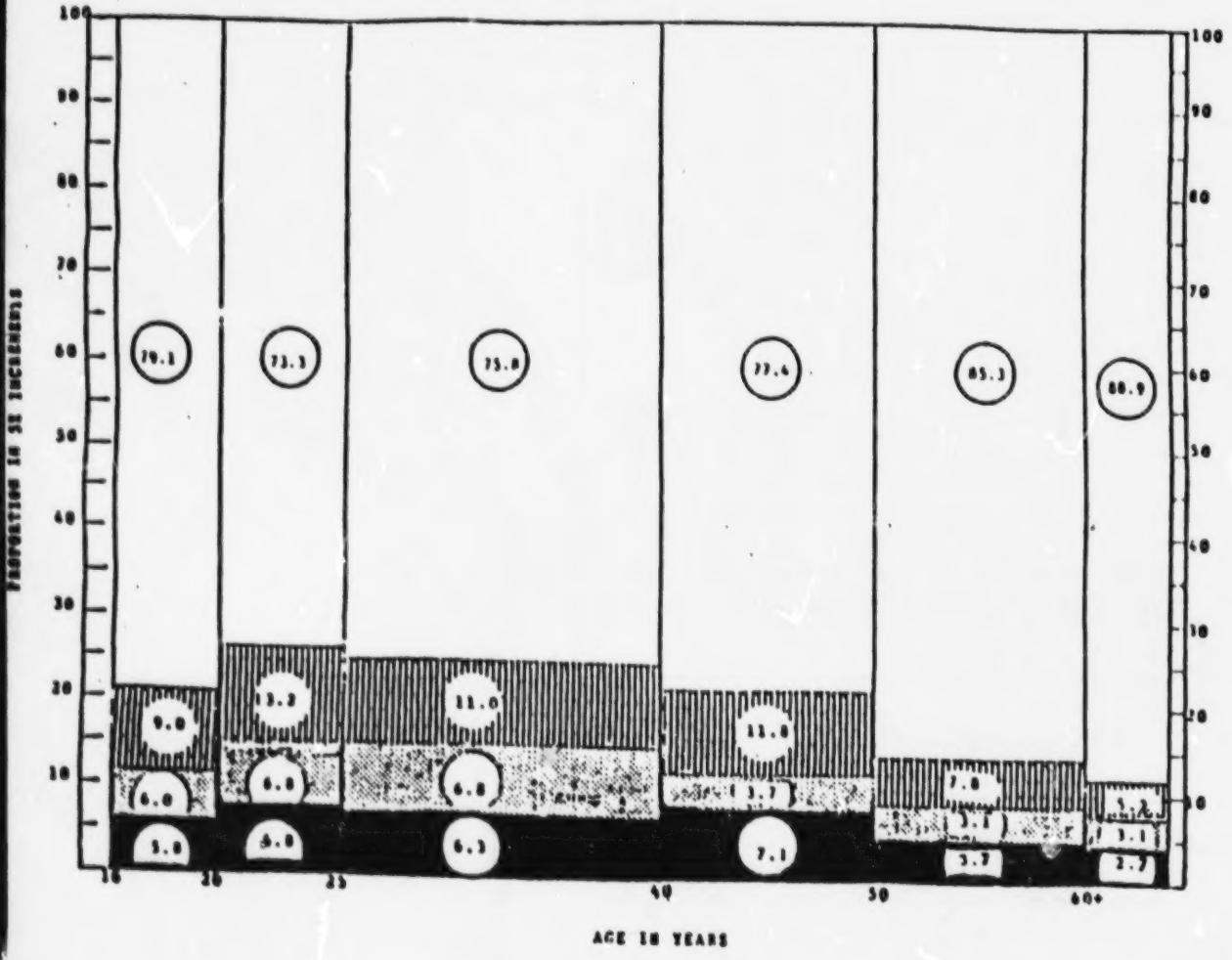
Key for all graphs can be found on Page 33

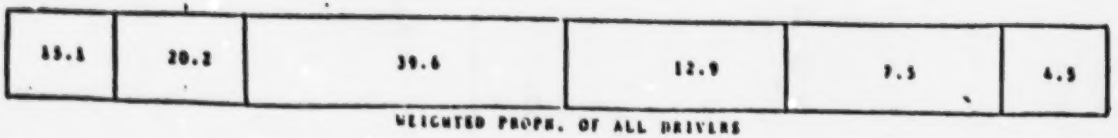
TABLE 9b ACCIDENT CAUSE AND WOULD CALL POLICE

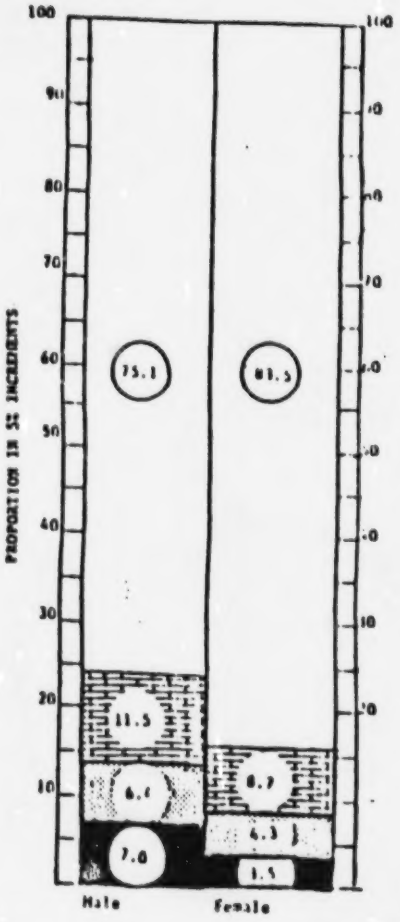
VARIABLE	BAC mg/100ml 0-20	21-50	51-80	>80	Weighted propn of all drivers	Weighted propn of impaired drivers
	%	%	%	%	%	%
ACCIDENT CAUSE						
Speed	75.8 (2.6)	11.9 (3.6)	5.0 (2.1)	7.4 (3.1)	13.0	16.1
Alcohol	78.6 (0.8)	10.2 (1.3)	6.1 (0.6)	5.1 (0.9)	52.7	43.4
Other	75.8 (1.7)	11.2 (0.7)	5.8 (0.8)	7.2 (1.0)	34.3	40.5
WOULD CALL POLICE						
Yes	78.3 (0.7)	10.4 (1.5)	5.4 (1.0)	5.9 (1.0)	73.4	70.7
No	74.8 (2.6)	11.9 (2.0)	7.1 (1.1)	6.2 (2.2)	20.4	20.9
Other	74.2 (6.5)	10.8 (1.5)	6.8 (1.0)	8.2 (1.6)	6.3	8.4

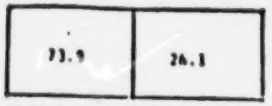
*( )=2 standard errors

TABLE 10a DRIVER AGE GROUP AND SEX









Key for all graphs can be found on Page 33

TABLE 10b DRIVER SEX AND AGE GROUP

VARIABLE	BAC mg/100ml 0-20	21-50	51-80	>80	Weighted propn of all drivers	Weighted propn of impaired drivers
	%	%	%	%	%	%
DRIVER SEX						
Male	75.1 (1.2	11.5 (1.3)	6.4 (0.6)	7.0 (1.0)	73.9	84.8
Female	83.5 (2.9)	8.7 (1.8)	4.3 (1.2)	3.5 (0.9)	26.1	15.2
AGE GROUP						
16-19	79.1 (3.6)	9.0 (2.6)	6.0 (1.3)	5.8 (2.1)	15.1	14.7
20-24	73.3 (1.9)	13.2 (1.9)	6.8 (1.5)	6.8 (2.0)	20.2	22.4
25-39	75.8 (2.6)	11.0 (1.2)	6.8 (0.4)	6.3 (0.9)	39.6	41.0
40-49	77.4 (1.2)	11.8 (4.6)	3.7 (1.1)	7.1 (2.3)	12.9	14.8
50-59	85.3 (2.5)	7.8 (2.1)	3.1 (1.9)	3.7 (2.9)	7.5	4.6
60+	88.9 (5.7)	5.2 (4.8)	3.1 (2.9)	2.7 (1.1)	4.5	2.1

*( ) =2 standard errors

TABLE 11

POPULATION STRATA BY DRIVERS' SEAT BELT USE

Variable	Yes	No	Weighted Propn. of all drivers
Census Metropolitan Area	61.8	38.2	71.9
50,000 - 99,999	54.9	45.1	9.5
10,000 - 49,999	53.8	46.2	11.1
5,000 - 9,999	50.9	49.1	6.0
Residual	62.8	37.2	1.5

TABLE 12

Proportion of drivers wearing seat belts by selected variables

Variable	Seat belt use %
Time	
9:00-10:30 p.m.	61.3
10:30-midnight	58.2
midnight-1:30 a.m.	55.0
1:30-3:00 a.m.	49.9
Day	
Wednesday	60.1
Thursday	58.9
Friday	59.2
Saturday	55.4
Class of site	
Urban	56.8
Suburban	58.8
Rural	67.3
Trip distance	
0-5 miles	55.2
6-15	59.5
16-30	58.4
31-100	56.3
greater than 100	99.7
All	58.7

TABLE 13

Driver belt use by sex and age group

Sex and age group	Seat belt use %
Males	
16-24	49.1
25-39	50.6
40-59	64.5
60†	75.0
All	54.0
Females	
16-24	62.0
25-39	68.7
40-59	76.1
60†	75.9
All	67.9
Both sexes total	58.0

TABLE 14

Proportion of drivers' who would call police to report drunken drivers, by age and sex

Driver sex and age-group	Proportion who would call police (%)
Males	
16-24	71.7
25-39	72.1
40-59	85.6
60-	90.1
All	75.5
Females	
16-24	80.1
25-39	80.6
40-59	85.6
60-	89.7
All	81.7
Both sexes total	73.4

TABLE 15

Drivers' assessment of chief cause of accidents, by age group

	Cause		
Age group	Speed %	Alcohol %	Other %
16-24	11.2	57.6	31.1
25-39	12.0	51.9	36.1
40-59	14.2	45.8	40.0
60+	19.6	41.0	39.4

TABLE 16

Selected Statistics for British Columbia, 1974-80

	1974	1975	1976	1977	1978	1979	1980
Litres of absolute alcohol per person over 15 years of age	12.2	12.6	12.8	12.0	12.9	12.5	13.0
Vehicle miles driven (x 100 million)	124	126	130	139	148	158	168
Registered Drivers	1,485,555	1,571,271	1,634,323	1,699,524	1,769,816	1,843,203	1,950,336
Alcohol related fatal crashes	233	220	210	181	201	212	251
Alcohol related fatalities per 100 million miles driven	1.88	1.75	1.62	1.30	1.36	1.34	1.49
Number of registered drivers per alcohol-related fatality	6,375.7	7,141.8	7,782.5	9,389.6	8,805.0	8,694.4	7,770.3
Population	2,375,700	2,433,200	2,466,600	2,499,800	2,542,300	2,589,500	2,666,100
Adults charged Criminal Code violations (not traffic)		52,762	52,789	54,770	55,412	57,248	61,894
Driving while impaired charges		22,817	23,036	22,431	21,228	20,574	22,207
D.W.I. as % of other c.c. charges		43.2	43.6	40.9	38.5	35.9	35.8

S U·M M A R Y

"The Characteristics of Night-Time Drivers in British Columbia"

A report of the

Motor Vehicle Task Force

A CounterAttack Research Study

December 1982

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EXECUTIVE SUMMARY

"Characteristics of Night-Time Drivers in British Columbia"

This report provides a summary of the analysis of information gathered in a night-time roadside survey of 7,380 persons driving in the Spring of 1981, in British Columbia. The survey was directed by the research section of Counter-Attack on behalf of the Motor Vehicle Task Force.

The survey collected data on seat belt use; driver blood alcohol content; place of alcohol consumption; vehicle type. Questions were asked on distance driven; chief cause of accidents; would they call police if they saw a drinking driver.

Over 94% of the drivers voluntarily and successfully provided information and breath samples for analysis. A summary of the results follows.

Drivers' Blood Alcohol Content (BAC)

Of the 6,944 drivers tested in this survey, 6.1% were legally impaired as defined by the Criminal Code of Canada (i.e. over .08%); a total of 12% were over .05% (i.e. impaired to an unsafe level under British Columbia law); 88% had a BAC between .00% and .05%.

The profile of the impaired driver which emerges from the study is of a male under fifty years of age, who had been drinking at licensed premises, not wearing a seat belt, having passengers in the vehicle, on a journey of 5 miles or under, and holding the view that speed or some cause other than alcohol was the primary contributor to traffic accidents. He and his like are driving more often on days closer to the weekend, later at night, and especially on Saturday night and the early hours of Sunday morning.

From the survey of all the drivers tested:

- 12% of drivers were impaired in terms of criminal and British Columbia law.
- Males were twice as likely to be impaired than were females; 7% of males and 3.5% of females were legally impaired; 13.4% of males and 7.8% of females were over .05% BAC.
- Drivers over fifty years of age were much less likely to be impaired than were younger drivers; 2.7% of those over sixty years old and 3.7% of those fifty to fifty-nine years old were legally impaired whereas 7.1% aged forty to forty-nine years; 6.3% twenty-five to thirty-nine years; 6.8% twenty to twenty-four years; 5.8% sixteen to nineteen years were legally impaired.

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. Impaired drivers were more than twice as likely not to be wearing seat belts compared to drivers not impaired.

. 16.3% of those who had been drinking in licensed premises were legally impaired, while 10.8% of those drinking elsewhere were legally impaired.

. 5.1% of drivers legally impaired cited alcohol as the chief cause of traffic accidents, while 7.3% of those legally impaired cited causes other than alcohol.

. 10.7% of drivers without passengers were over 0.5% BAC, while 20% of drivers with 3 or more passengers were over .05% BAC.

. The later in the night, the greater the proportion of impaired drivers on the road. The proportion of drivers over .08% BAC increases from 2.6% between 9 and 10:30 p.m. to 14.4% between 1:30 and 3 a.m. At the .05% BAC level the proportion rises from 5.3% betwen 9 and 10:30 p.m. to 25.3% between 1:30 and 3 a.m.

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. The drinking driving rate rises each night from Wednesday through Saturday. 7.8% of drivers on Wednesday night are over .05% BAC, while on Saturday night the proportion rises to 15.1%.

. 73.6% of the legally impaired drivers were on trips of under 16 miles.

. 83% of drivers surveyed were in cars, 13% were in trucks, mainly pick-ups.

. 5.6% of car drivers and 5.9% of truck drivers were legally impaired. (Heavy commercial vehicles were not included in survey.)

Seat Belt Use

Of the 7,380 drivers who were interviewed, 59.5% of the drivers and 50.2% of the passengers were wearing seat belts.

Driver seat belt use was related to:

. Time - the lowest usage was from 1:30 - 3 a.m. (49.9%); highest usage was between 9 and 10:30 p.m. (61.3%).

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- Distance - highest use (99.7%) on trips longer than 100 miles.
- Sex - females wore seat belts more than males (67.9% compared to 54%).
- Age - the older the person, the more likely they were to be wearing seat belts (49% of wearers were sixteen to twenty-four years old; 75% were over sixty years of age).
- Blood Alcohol Content - 63.4% of legally impaired drivers were not wearing seat belts.

Opinion and Attitudes

Two questions were asked with results as follows:

- 57.6% of sixteen to twenty-four year olds cited alcohol as the chief cause of motor vehicle crashes, whereas 41% in the sixty-plus age group gave this opinion.
- Overall 52% gave alcohol as the chief cause of crashes; 13% cited speeding; and 34% gave other causes.
- 73.4% of drivers said they would call the police if they saw a drunk driver. This question was asked primarily to test the reach and effectiveness of the recent CounterAttack information campaign;

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"If you see a drinking driver... please, phone the police." Of the sixteen to twenty-four year olds, 71.7% indicated 'yes'; 90.1% of the sixty-plus year olds gave a 'yes' answer.

General Conclusions

The profiles of night-time drivers in British Columbia that emerge from such studies have value to both preventative and enforcement program planners. This study is particularly useful in that it largely replicates a similar survey undertaken in the province in 1974, and thus allows for an assessment of change over a period of time.

Comparing the findings between the 1974 and 1981 surveys, it was found that;

- There has been no statistically significant increase in drinking and driving levels.
- Over this time period non-traffic Criminal Code charges have increased, while drinking driving Criminal Code charges have remained stable.
- Alcohol consumption has increased in the province slightly during this time, but the likelihood of being killed in an alcohol-related crash has slightly decreased.

*